

Claims

I Claim:

1. A mechanical weighing scale comprising:
 - a platform for supporting an object to be weighed;
 - an analog display for indicating a weight of the object;
 - a digital display for indicating the weight of the object;
 - a movable member associated with a plurality of openings;
 - a mechanical weight sensing arrangement including at least one lever mechanically responsive to the platform, a calibration plate mechanically responsive to the at least one lever, and a rack and pinion arrangement mechanically responsive to the calibration plate, the mechanical weight sensing arrangement for sensing the weight of the object supported on the platform, mechanically causing the analog display to indicate the sensed weight of the object, and moving the movable member in proportion to the sensed weight of the object;
 - a sensor arrangement for sensing the openings as the movable member moves in proportion to the sensed weight and generating a pulse for each of the openings sensed; and
 - a processor for counting the pulses, converting the counted pulses into a corresponding value of the weight sensed, and causing the digital display to display the value of the weight sensed.
2. The scale according to claim 1, wherein the movable member is selected from the group consisting of a disc, a disc segment, a wheel, a wheel segment, a gear, a gear segment, and a gear driven rack.
3. The scale according to claim 2, wherein the movable member defines the openings.

4. The scale according to claim 3, wherein the openings are slots defined between spaced apart tabs.
5. The scale according to claim 2, wherein the moveable member is moved by the rack and pinion arrangement of the mechanical weight sensing arrangement.
6. The scale according to claim 1, wherein the moveable member is moved by the rack and pinion arrangement of the mechanical weight sensing arrangement.
7. The scale according to claim 1, wherein the movable member comprises a component of the analog display.
8. The scale according to claim 7, wherein the movable member comprises a pointer.
9. The scale according to claim 8, wherein the pointer is moved by the rack and pinion arrangement of the mechanical weight sensing arrangement.
10. The scale according to claim 8, wherein the analog display further comprises a face having indicia thereon corresponding to numeric values of weight, the pointer being movable over the face.
11. The scale according to claim 10, wherein the face defines the openings.
12. The scale according to claim 7, wherein the movable member is selected from the group consisting of a rotatable drum-shape dial, a segment of a rotatable drum-shape dial, a rotatable disc-shape dial, and a segment of a rotatable disc-shape dial.
13. The scale according to claim 12, wherein the movable member includes indicia corresponding to numeric values of weight.
14. The scale according to claim 13, wherein the analog display further comprises a stationary pointer, the moveable member moving under the pointer.
15. The scale according to claim 14, wherein the movable member defines the openings.

16. The scale according to claim 12, wherein the movable member defines the openings.
17. The scale according to claim 16, wherein the openings are slots defined between spaced apart tabs.
18. The scale according to claim 12, wherein the moveable member is moved by the rack and pinion arrangement of the mechanical weight sensing arrangement.
19. The scale according to claim 1, wherein the sensor arrangement comprises an optical interrupter.
20. The scale according to claim 19, wherein the optical interrupter comprises a photosensing element and a corresponding light-emitting element.
21. The scale according to claim 1, wherein the sensor arrangement comprises a plurality of light-sensing elements.
22. The scale according to claim 21, wherein each of the light-sensing elements is associated with one of the openings.
23. The scale according to claim 22, wherein the sensor arrangement further comprises a plurality of light-emitting elements, each of the light-emitting elements for emitting light to be detected by a corresponding one of the light-sensing elements.
24. A mechanical weighing scale comprising:
 - a platform for supporting an object to be weighed;
 - an analog display for indicating a weight of the object;
 - a digital display for indicating the weight of the object;
 - a mechanical weight sensing arrangement including at least one lever mechanically responsive to the platform, a calibration plate mechanically responsive to the at least one lever, and a rack and pinion arrangement mechanically responsive to the calibration plate, the

mechanical weight sensing arrangement for sensing the weight of the object supported on the platform and mechanically causing the analog display to indicate the sensed weight of the object, the rack and pinion arrangement including a rack member having a plurality of openings;

a sensor arrangement for sensing the openings as the rack member moves in proportion to the sensed weight and generating a pulse for each of the openings sensed; and

a processor for counting the pulses, converting the counted pulses into a corresponding value of the weight sensed, and causing the digital display to display the value of the weight sensed.

25. The scale according to claim 24, wherein the openings are slots defined between spaced apart tabs.

26. The scale according to claim 24, wherein the sensor arrangement comprises an optical interrupter.

27. The scale according to claim 26, wherein the optical interrupter comprises a photosensing element and a corresponding light-emitting element.